

The Lazy Person's Guide to Controlling Technologies

Part II: Electronic Tethers

By Retired Air Force Major Dale J. Long

I have resigned myself to a simple fact of modern life: Thanks to the marvels of modern communications technology, I will never again be "out of touch." Thanks to the cell phone, someone from work will still be able to find me once I leave the office. My wife will be able to call me (usually just after I have passed the supermarket) and ask me to pick up some thing she needs for dinner.

It's not all bad, though. Having a cell phone means I can reach out and touch my staff no matter where they are in the country. It means I can call up vendor representatives no matter where they are and check on an order or project status. It also means never having to miss saying goodnight to my children no matter where I am, though I would prefer being there in person.

Cell phones, pagers, e-mail devices and related hybrids have created a shared expectation that we will all be available 24 hours a day, 7 days a week. These wireless convenience devices have significantly changed how people relate to each other over the past 20 years.

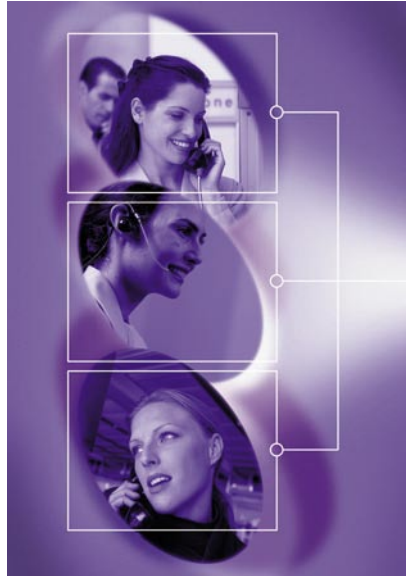
This edition of the Lazy Person's Guide will examine some of these changes and look at convenience technologies past, present, and possibly future in our personal communications environment.

Reach Out and Touch Someone

I have written before in *CHIPS* on the development of both wired and wireless communications, primarily from the standpoint of technology development, so we will skip a lengthy discussion of how the telegraph, telephone and radio were invented. What I would like to note, however, is that these three technologies were disruptive to long-established patterns of behavior.

After centuries of working relationships based solely on personal contact and paper correspondence, the ability to transmit text or voice instantaneously over great distances had a profound effect on the conduct of both public and private business.

Advances in telephone networks and the evolution from the telegraph to e-mail, however, did not change the essential fact that people have to be in particular physical locations to use wired electronic communications. Even cordless phones don't let you stray too far from the base unit. Our new wireless communications networks, though, enable communications without the inconvenience of staying within range of a wired tether. We are in the process of extending some type of wireless service to every corner of the country.



However, we are not doing it as quickly as some might like. The United States and Europe developed extensive wired networks that form the backbone of our traditional telephone systems and the Internet, making us the world leaders in telecommunications in the 20th century.

At the risk of sounding whiny, these same legacy networks are now the boat anchors holding us back from being the world leaders in telecommunications in the 21st century. Countries in Europe and Africa that never developed comprehensive wired telephone networks have leapfrogged the United States with cellular phone systems years ahead of what we have.

Japan has taken wireless access to great heights, building both cellular phone and wireless networking systems that reach to every corner of the country, including deep into its mass transit subway systems. Just try getting a reliable cell phone or wireless network connection in the New York or Washington D.C., subway. Finland and Ghana reportedly have more comprehensive cellular phone networks than we do in the United States.

Countries who realize that their future economic success depends on sophisticated telecommunications networks providing seamless universal access to wireless voice and data as a public utility are deploying these systems at a rapid pace. In the United States, wireless deployments have been slowed by fights over standards and efforts by established vendors to delay or prevent deployment of wireless network access by municipal governments.

While there is some evidence that corporate interests allegedly run business operations better than governments, my opinion is that allowing market competition to determine technical standards does not always result in the fastest path to the best technology. Cases in point: Beta versus VHS (video home system) high-definition television (HDTV) broadcast standards; Blu-Ray versus HD-DVD (High Density Digital Versatile Disc); Global System for Mobile Communications (GSM) versus Code Division Multiple Access (CDMA); CDMA versus Wideband Code Division Multiple Access (W-CDMA) on cell phones; and any Microsoft product versus pretty much any of its crushed or marginalized competitors.

None of these were decided on their technical merits. Beta had better picture and sound than VHS but lost. The new DVD standard battle might come down to deciding whether backward compatibility with existing DVDs is more important than disc capacity, though what really will matter is who signs up the most movie studios for its format. Much of the rest of the world settled on GSM or W-CDMA

for cell phones. The United States and parts of Europe, however, use CDMA2000, which is based on older, less compatible standards and has prompted some speculation that CDMA exists to provide a domestic market and patent protections for some U.S. and European mobile phone providers.

Therefore, it is my opinion that technical superiority rarely decides the outcome in the market. What usually decides the outcome is convenience. Monopolies also pretty much guarantee victory, though convenience plays a role there too. It is generally more convenient to buy from a monopoly than to go off the beaten track for an alternative. How many of us are so annoyed with our cable television providers that we are willing to ditch them (and their broadband Internet access) to get satellite TV service with most of the same channels and slower Internet access?

Convenience drives our desire for wireless connectivity, which in turn is driving research and development, service offerings, infrastructure development, and marketing and sales in our modern telecommunications environment. It is because of convenience that my generation is willing to pay \$40 a month for a cell phone so our spouses can call us while we are on the way home to ask us to pick up a bag of ice to make iced tea for dinner. It did come in handy when my car would not start, but that only happens once every six or seven years and there is usually a landline nearby.

Form and Function

For me, cool miniature technology all started with comic strip hero Dick Tracy and his wrist TV communicator. In 1964, when I was at the very impressionable age of seven-years-old, Dick Tracy traded in his two-way wrist radio for a two-way wrist TV. An entire generation of American youth saw this vision of the future in their newspaper "funnies" section every day. Who knows? It may have been what started today's now adult engineers on the path to miniaturizing every electronic device they can get their hands on, perhaps in the hope that some day they would get to wear a videophone on their wrists, too.

However, it's been more than 40 years since Diet Smith gave Tracy that watch, and I still don't have one like it on my wrist. Cell phones with cameras come close, but not quite. But we do have quite a few gadgets about the same size that are amazing. I think what impresses me the most about cell phones, pagers, Blackberrys, etc., is that no matter where you are, the system can find you and deliver your call or message. Of course, that's also the scary part: They can find you wherever you are hiding. For every technophile who wants 24/7 connectivity there is probably a technophobe that fears being tracked down or identified by secret chips implanted in some electronic device he or she is carrying.

Let's concentrate on the big three of wireless convenience devices: pagers, cell phones and e-mail. Yes, personal digital assistants (PDAs) are very popular, but even though some have the ability to network their main purpose is to organize information.

Page Me

Pagers are lightweight, portable receivers that let someone call a phone number and send you a short message. Usually the display shows you a callback number or some text. The pagers I enjoyed

the most were the radio pagers we had 20 years ago when I worked in a Strategic Air Command munitions maintenance squadron. It wasn't Dick Tracy quality, but it was as close as I had ever been to it. Unlike alpha-numeric text pagers, callers could leave voice messages. When the pager went off, you pushed the button and the caller's recorded message came out of the speaker.

They were for official use only, but as with every technology ever given to military people, we did make some non-official personal use of them that did not interfere with government business and incurred no cost to the government. Since we were in the bomb business no one blinked when one of our pagers went off announcing the impending start of a kinetic energy seminar (meeting at the bowling alley) or trajectory analysis study (meeting at the driving range).

The pagers' primary function, however, was as a broadcast system that instantly notified everyone who had one that the alert "Klaxon" had gone off, signifying that we had to get six fully loaded strategic bombers lined up at the end of the runway to take off within a launch time prescribed by the proximity of the closest potentially hostile ballistic missile submarine off the New England coast and how fast its missiles could reach us. For this purpose, these pagers did their job very well and at a fairly reasonable cost.

The main limitation of pagers is that they are primarily one-way. They are rapidly losing ground in the market to cell phones as the latter comes down in price and as additional features are added. I often wonder why people would want both a pager and a cell phone. Zippy is no help; he just wants one of everything clipped to his belt whether he needs it or not.

However, I did get a plausible explanation from some U.S. Border Patrol agents: battery life. Cell phone batteries apparently only last as long as the manufacturer advertises if you keep them in sleep mode. Using a cell phone drains them much faster. So agents turn their cell phones off and leave their pagers, which run on replaceable AA batteries, on. Maybe as the rechargeable battery technology in cell phones improves we will see the end of pagers entirely; they are still a relatively cheap alternative if all you need is a quick notification.

Call Me

I dealt with cellular phones at some length in a previous article (http://www.chips.navy.mil/archives/04_summer/Web_pages/Telephony.htm) so this time we'll just touch on two things: video capability and hybrid phones.

When I last wrote about cellular phones 15 months ago, picture resolution was measured in hundreds of pixels and most would only transfer images between phones on the same service. What a difference a year makes. Now camera phones are offering multi-megapixel resolution, and you can either transmit your photos over the service or download them to your computer.

But what practical use does a camera phone have? Yes, it can be cool to send vacation pictures while you are on vacation or a snapshot of that attractive nightclub singer to your buddy. But where's the beef? If you're in the military reconnaissance or intelligence

business, you already know the value of real-time information. If you're a customs inspector at a port of entry you can send photos of cargos and manifests back to the office where someone can check them against computer records. If you're an emergency medical technician you can send a photo of a wound back to a trauma surgeon for advice on how to patch it up and keep the victim alive long enough to make it to a hospital.

Hybrid phones that combine information organizers and e-mail capabilities are also improving. I finally got the Kyocera 7135 I mentioned in the cell phone article last summer, and it has become my second brain. I can discuss it without risk of appearing to endorse it because, predictably, it's being phased out and replaced by even newer technology. This phone/PDA hybrid keeps my schedule, holds information for all my contacts, can tell me what time it is anywhere in the world, holds various word processing, spreadsheet and PDF documents and has an e-mail client. It also has fairly large screen, 160x160 pixels (2 by 2 inches) with a 65,000-color display. I have not traveled with a laptop since I got it.

Cell phones share one particular characteristic with pagers: The caller has to know your number. This can limit who can reach you. You can also turn the phone off while in a meeting, at a restaurant or in a movie theater, so you do have some control over when people can reach you. I have suggested to my wife that we should just cancel our traditional wired phone service and just use a cell phone, but she is not willing to give up wired service yet. However, an increasing number of people are apparently opting out of wired service in favor of wireless.

In a way, it's a bit like the "why carry a pager and a cell phone" discussion. If your phone number can follow you anywhere, why do you need more than one phone number?

Mail Me

Unlike cell phones, where people tend to discuss their business without leaving tracks or leave short voice mail messages, wireless e-mail devices can be like clipping an electronic avalanche to your belt. Messages accumulate... and accumulate... and accumulate. In the last issue I outlined a 12-step program for regaining control of your life in the face of 24/7 e-mail. This goes double for a Blackberry. Here's a story about why.

Before I retired, the headquarters where I was assigned had 22 directors and some other key staff using Blackberry wireless e-mail devices. A sizable sum of money was spent buying a Blackberry server, attendant networking equipment and the Blackberry devices themselves. After several weeks of deployment and testing, all the senior O-6s and flag officers had little e-mail readers clipped to their belts.

The user community fell into two basic groups. Group one wore Blackberry devices as a decoration, using them only when absolutely necessary. They might check them periodically to see if their boss had sent them something, but clearing the unit often fell to their executive officer.

Group two embraced Blackberry devices and played with them constantly, often exhibiting all the finest symptoms of e-mail addiction. In this group, a very senior flag officer was very comfortable with

technology and really enjoyed his Blackberry. However, this proved disruptive on a couple of levels.

Flag officer staffs are generally (no pun intended) well-oiled machines that maximize every minute of their boss's day. They work to three particular rhythms: boss in the office, boss in a meeting, boss out of town. For example, when the boss is in a meeting it gives the staff a chance to clear the outbox and refill the inbox, the wooden ones filled with the paper and the electronic ones. In the hour the boss is in the meeting, any good staff can shuffle stuff in and out and have time left over to plan the weekend golf outing.

However, if the boss takes a Blackberry into a meeting, the staff may get messages every few minutes with questions about various things that come up in the meeting. Instant answers are expected. They may no longer have "quiet time" to organize things. From the perspective of some people I knew on the staff, the disruptions from the e-mail made it somewhat harder to review and shuffle the dozens of staff packages in and out of the office every day.

Also, it has been my experience that if lower-ranking officers tune out of a meeting to send e-mail or take a cell phone call they normally get their heads handed to them by the person at the head of the table for the breach of etiquette. But who's going to tell a flag officer in a meeting that he might be sending, along with his e-mail, the wrong message about the value of everyone's time in the meeting?

Last Words

Portable wireless technology has become the zebra mussel of the modern work environment. For those of you unfamiliar with this particular mollusk, the zebra mussel is a non-native invasive species that has pretty much taken over parts of Lake Champlain between Vermont and New York. First they were a novelty. Then they became a pest and a nuisance. Despite many attempts to control them, they have become a permanent part of the ecosystem that has resisted all attempts at control.

Then a strange thing happened. Some of the scientists who had been objecting to the zebra mussel's impact noticed that they were cleaning up a somewhat more serious problem in the lake: algae blooms. Invasive, disruptive species are not supposed to have an upside, but somehow this one managed to become useful.

That's kind of how I see camera phones and wireless e-mail. We are constantly being bombarded by advertisements about new technology, but much of it is still a solution in search of a problem. Like the zebra mussel, I am sure it all has at least one useful purpose. I will start figuring it out right after I play another game or two of Bejeweled on my cell phone.

Until next time, Happy Networking!

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